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LONDON LETTER.

THE application to the treasury, on behalf of the Marine biological association, to which reference was made in a former letter, has been very successful. An intimation has been received by the council that their lordships propose to submit to the house of commons an estimate which will grant to the association the sum of five thousand pounds, to be paid in two annual instalments, together with a yearly subscription of five hundred pounds for five years afterwards. This is as it should be, and the conditions imposed are practically nominal, as they entirely coincide with the intentions of the council. The accounts are to be formally audited, and afterward published; assistance is to be given to the solution of the economic questions connected with the British fisheries; and accommodation is to be afforded to investigators who may desire to work out definite problems of marine zoölogy. A resident superintendent has been found in the person of Mr. Walter Heape, who will enter upon his duties with the new year, and in preparation for them has already visited the chief American institutions of the same kind. He is well known as an embryologist, and has recently received the honorary degree of M. A. from the University of Cambridge, for his services as demonstrator of animal morphology. Having been brought up to a business life which promised to be one of considerable success, he deliberately relinquished it in order to devote himself to scientific pursuits; and in 1879 he was attracted to Cambridge by the high reputation of Mr. F. M. Balfour, who died three years later. But the impulse which Balfour had given to the study of morphology in the university was well sustained by his senior pupils, Sedgwick, Welldon, and Heape; the latter of whom will now have the opportunity, in the new laboratory at Plymouth, of doing very much to advance his favorite sciences of morphology and embryology.

A very interesting exhibition of the appliances used in geographical education has been recently opened under the supervision of the Royal geographical society. About eighteen months ago, Mr. J. S. Keltie (sub-editor of *Nature*) was appointed by the council of the society as an inspector of geographical education for the purpose of obtaining information respecting its position and methods by personal investigation, both in the United Kingdom and on the continent of Europe, and by correspondence as regards America. He has published an elaborate report, which has been recently issued as one of the society's supplementary papers; and the collection which he made of the various appliances used in geographical

education is now on view. The exhibits are classed as follows: 1. Wall-maps; 2. Globes; 3. Telluria, planetaria, etc.; 4. Models and relief-maps; 5. Geographical pictures; 6. Atlases; 7. Text-books; 8. Miscellaneous. The collection is one of great interest, though, as Mr. Keltie says, "it contains specimens of all gradations of quality. In all classes will be found objects which may be taken as examples of 'how not to do it.'" It is hoped that many schoolmasters may be induced to visit the exhibition during the Christmas holidays, and a series of conferences on the subject of geographical education has been arranged. Many eminent men at both the older universities are desirous of seeing geography formally introduced as a branch of scientific study. The appointment of a university teacher in the subject was suggested at Cambridge some time ago, and it is rumored that a similar step will soon be actually taken at Oxford. Should this prove to be the case, there can be no doubt that it would have a powerful influence in improving the position of geography in the public schools, where it receives, as a rule, from one to two hours weekly of more or less perfunctory teaching at the hands of men who have no special interest in their work, even if they are not absolutely opposed to it from its taking up time which they would like to see devoted to classics. At King's college, London, Prof. H. G. Seeley, F.R.S., is professor of geography.

The fact of the comparatively slow adoption of the electric light in England has already been mentioned in these letters, although the reasons thereof may not have been. The chief reason is to be found in the restrictions upon the development of the industry laid down by the electric lighting act of 1882. Until these are relaxed, no commercial company can light a district with any chance of financial success, owing mainly to what are known as the 'compulsory purchase clauses.' Within the last few days an official programme of legislation for next session has been put forward, and among the measures there named is a new electric lighting bill. The political prospect, however, is so disturbed, that the chances of any such domestic measure becoming law this session are very small.

In connection with this subject, it may be mentioned that there are well-founded rumors of a new form of battery, suitable for electric lighting, to which the inventors give the name 'primary' battery, but which is really a modification of the ordinary 'secondary' battery, for which it is claimed that its yield in ampère hours, per pound of lead, far exceeds any thing yet accomplished. Cells prepared in England have

been subjected to very severe tests in Paris by M. Hospitalier and other well-known electricians.

The 'juvenile lectures' at the Royal institution, first rendered popular by Faraday in his 'Chemistry of a candle,' are this year being given by Professor Dewar, who has chosen 'The story of a meteorite' as his subject.

The Corporation of Liverpool has just issued the programme of its twenty-first winter course of lectures, to be given in the rotunda lecture-hall of the Free public library. These lectures are paid for by the corporation, and admission thereto is absolutely free. The hall holds about sixteen hundred, and is usually well filled by the 'great unwashed' of Liverpool, on Monday, Tuesday, Wednesday, and Thursday of each week from Jan. 4 to March 11. The first lecture is by Mr. William Lant Carpenter, on 'Temperature and life in the depths of the sea.' Prof. Oliver Lodge, whose lecture on 'Dust' in Montreal will be remembered, and several of his colleagues in University college, Liverpool, as well as some of the professors in Stonyhurst college, are among the lecturers. It is greatly to be wished that other towns, on both sides of the Atlantic, would follow the example thus set. W.

London, Dec. 23.

LETTERS TO THE EDITOR.

. Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.

Eskimo building-snow.

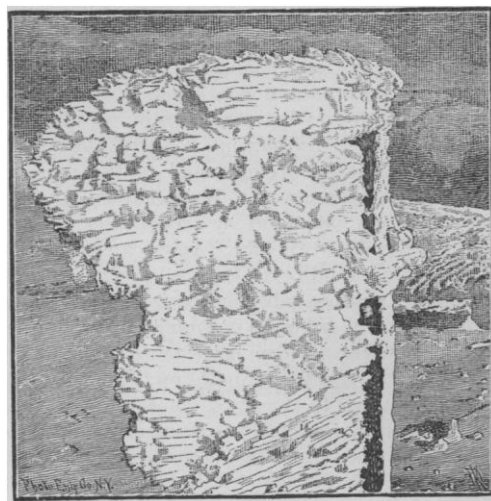
I ENCLOSE a photograph, kindly sent me by General Loring, of the Boston Museum of fine arts, of snow impacted on a telegraph-pole, by a strong gale, near the summit of Mount Washington. It furnishes a good example, near home, of the texture of snow, under the influence of a fierce wind and intense cold, and will make clear some remarks I have previously made in your journal regarding the use of snow by the Eskimo among whom I travelled. In my description of the igloo (snow-house) of the Innuin in *Science* during the summer of 1883, I mentioned that the first snows that fall are not used by the Eskimo of my acquaintance to build snow-houses, the preliminary igloos being of ice for three or four weeks, until the deep drifts of snow had been subjected to very low temperatures and the 'packing' influences of strong winds. The winter weather of the summit of Mount Washington is in most respects essentially arctic.

In the accompanying illustration we see readily the peculiar texture or strong 'binding' power of the snow under those conditions of wind and cold, and it is now in a condition for an igloo snow-block. It is readily seen that it must have great cohesion to hold up such a heavy load on such a fragile support.

The cohesion of snow in our latitudes (and the early snow of the Arctic) is of a plastic, wet, or 'pasty' character, as shown in the making of snowballs, the formation of huge balls of snow on the ground as

they roll along, snowmen, balling on horses' feet, etc. (also shown by Mr. Williams's letter in *Science* of March 6, 1885; Mr. Stone's letter of May 29, 1885, in *Science*; and others to you). This is essentially unfit for snow-building.

The snow fit for igloos is of a dry, almost stone-like character. The cutting of a thin portion from the side of an arctic snow-block, instead of giving a sheet of plastic snow as from a snowball, produces a shower of fine powder, exactly the same as from a large lump of loaf-sugar. In short, the arctic building snow-block stands in about the same relation to those we would make here, as the brick just from the mould, and before it is dried, bears to the same object when burnt in the kiln, and ready for use. The arctic snow-blocks ring like a well-burnt brick; and this is especially noticeable during intensely cold weather,



HARDENED SNOW ON A MOUNT WASHINGTON TELEGRAPH-POLE.

when I have heard a snow-block, as it was struck with a knife, give forth a clear, metallic, musical sound, not unlike the striking of a highly tempered bar of suspended steel with the hand, or other non-metallic substance.

I remember, when my natives were building a snow-house on the high 'divide' between Back's Great Fish River and Hudson's Bay, the thermometer in the minus 60's, a block of snow rolled down the hill for fifteen or twenty feet, and I doubt if a rolling guitar would have given forth many more confused musical tones than the bumping block as it struck and bounded along down the hard, stone-like bank of snow.

Yet it must not be inferred that this dry, compact snow has any of the characteristics of ice about it. It is not only much lighter than ice, but, I believe, lighter than the plastic snow we have, certainly not so dense as when made into the ordinary snowball. In fact, the least quantity of ice in the snow — which sometimes happens — renders it more or less worthless for building, according to the amount. In the late spring, banks of snow having southern exposures, and thawing slightly about noon, only to